OAK RECOVERY PLAN

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Oak recovery plan

• Collaborative effort between The Morton Arboretum, Chicago Wilderness and the Lake County Forest Preserve District
• Create strategies and recommendations to restore oak canopy dominance in the Chicago region
Oak recovery plan

• How did we get here?
  • What is the ecology that shapes oak ecosystems?
• Where are we?
  • What is the current status of oak ecosystems?
• What can we do to improve the quality and extent of oak ecosystems?
How did we get here?

HISTORY AND ECOLOGY OF OAKS
Prehistoric influences

• Chicago was shaped by glaciers
  • Glaciers expanded and retreated from 85,000-10,000 years before present
• Flattened out much of the region
• Created moraine topography
Native American management

- Native Americans settled 10,000 years ago
- Used fire to manage the land
  - Clear land for habitation and agriculture
  - Hunting
- Fire readily travelled across the flat landscape
Chicago ecosystems

Prevailing winds
Fire dynamics

- Prevents many woody species from establishing
Fire dynamics

• Prevents many woody species from establishing
• Selects for species that are fire tolerant
  • Herbaceous:
    • Extensive root growth
    • Quick regeneration
Fire dynamics

• Prevents many woody species from establishing
• Selects for species that tolerate fire
  • Woody species
    • Resprout from roots
    • Corky bark
Fire dynamics

• Prevents woody species from establishing
• Selects for species that tolerate fire
  • Woody species
    • Resprout from roots
    • Corky bark
• Oaks!!!
Oak Dominance in the Chicago Wilderness
Oaks dominated a large majority of wooded ecosystems in the original landscape – 1830’s
Why oaks?

Oaks are “foundational” or “keystone” species

• Create the structure that characterizes ecosystems
• When you create a situation where oaks will do well, so will the other native plants and animals.
• If we lose the oaks, we will lose these other species as well
THREATS!

What’s happening to our ecosystems?
Changes in management

Euro-American settlement

• “Tamed the wild”
  • Plow under prairies and savannas to create fields
  • Cut down many large trees
  • Remove predators, bison and elk
Changes in management

Euro-American settlement

• “Tamed the wild”
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Destruction of ecosystems

• Agriculture and urbanization
Oaks in the Chicago Wilderness
The importance of oaks has declined since pre-settlement
Pre-settlement oaks
1939 oaks
2010 oaks
Change in oak ecosystem area over ~180 yrs

• Region-wide ~17% of original oak ecosystem area remains
• Much was lost by 1939 - only 27% remained at that point
• Highly variable across the region
Fragmentation of ecosystems

• Remaining ecosystems are small and disparate
Status of Oak Ecosystems

- At a regional scale very few large parcels remaining – severe fragmentation

<table>
<thead>
<tr>
<th>Parcel Size</th>
<th>1939</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 – 200 acres</td>
<td>297</td>
<td>160</td>
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<tr>
<td>200 – 500 acres</td>
<td>139</td>
<td>70</td>
</tr>
<tr>
<td>500 – 1000 acres</td>
<td>25</td>
<td>6</td>
</tr>
<tr>
<td>1000+ acres</td>
<td>1</td>
<td>0</td>
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Health of oak ecosystems

• So we’ve lost a lot of our oak ecosystems
• But how are the remaining ecosystems doing?
Health of oak ecosystems

- So we’ve lost a lot of our oak ecosystems
- But how are the remaining ecosystems doing?

Not awesome.
Fire suppression

- Fire restricts woody species and selects for fire tolerant plants
- When fire is removed species that have never been in the Chicago region begin to take root
  - More maples, basswood and ash
Canopy closure
Oaks need light!

- Oaks do not grow in low light conditions
- Many plant and animal species that are native to the region can’t persist in closed forests
The Future for Oaks in the Chicago Wilderness

- We’re losing our oaks!
- Oldest trees are reaching the end of their lives
- No young trees to replace them
Invasive species

- Maples aren’t the only thing clogging up the oak woodlands
- Buckthorn
- Honeysuckle
RECOMMENDATIONS

How can we help oaks?
Take a step back

- Oaks were the dominant species prior to European settlement
- Oak ecosystems host a unique assemblage of plants and animals
- Oaks are in trouble!
  - Destruction of ecosystems
  - Fragmentation
  - Lack of fire
  - Invasive species
What should we do?
What should we do?

• Depends on who/where you are
  • Natural areas
  • Park departments
  • Municipal forestry
  • Private properties
  • Nurseries
Natural areas

- Eradicate invasive species
Natural areas

• Eradicate invasive species
• Bring back fire
Natural areas

- Eradicate invasive species
- Bring back fire
- Open up the canopy
Natural areas

• Eradicate invasive species
• Bring back fire
• Open up the canopy
• Expand our natural areas
Natural areas

• Eradicate invasive species
• Bring back fire
• Open up the canopy
• Expand our natural areas
• Reduce fragmentation
Municipalities and park departments

- Alter laws that affect oaks
- Change planting lists so that oaks are used as street trees
- Ordinances to protect large trees
Municipalities and park departments

• Alter laws that affect oaks
• Engage residents
  • Interpretive signs in parks can teach residents about oak ecosystems
• Money is tight. Use volunteers to help with tree plantings and management
Municipalities and park departments

• Alter laws that affect oaks
• Engage residents
• Use Emerald Ash Borer to improve species diversity
  • Lots of trees will be planted in the next five years
• Lets get some oaks in there
Private lands

- Residential properties
  - Urban
  - Rural
- Woodlots
- Agricultural properties
- Corporate campuses
Private lands

- Residential properties
  - Urban
  - Rural
- Woodlots
- Agricultural properties
- Corporate campuses
Status of Oak Ecosystems

- Much of what remains is privately owned
- ~30% overall
- Variable across the region
Recommendations for private property

• Promote programs that encourage native landscaping
  • Historic Oak Preservation Project
  • Conservation at home
Recommendations for private property

• Promote programs that encourage native landscaping

• Target landscape architects and landscape management companies
  • Reach multiple properties (commercial campuses, homeowner associations, golf courses etc.)
Recommendations for private property

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• Target landscape architects and landscape management companies
• Promote conservation easements
Recommendations for private property

- Promote programs that encourage native landscaping
- Target landscape architects and landscape management companies
- Promote conservation easements
- Publicize ecosystem services that oaks provide
Nurseries

- Diversify species mix
- Promote contract growing
Nurseries

• Diversify species mix
• Market oaks region wide to support sales
Nurseries

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• Organize acorn collections so that local acorns can be grown
Nurseries

• Diversify species mix
• Market oaks region wide to support sales
• Organize acorn collections so that local acorns can be grown
• Explore breeding for urban sites
How are we getting the word out?

- Two page executive summary
- ~30 page booklet
- Website
- Interactive maps
How are we getting the word out?

• Outreach
  • Chicago Region Trees Initiative
  • Chicago Wilderness
• Oaktober!
Questions?